



FMCSA-Sponsored Onboard Monitoring System Field Operational Test Program

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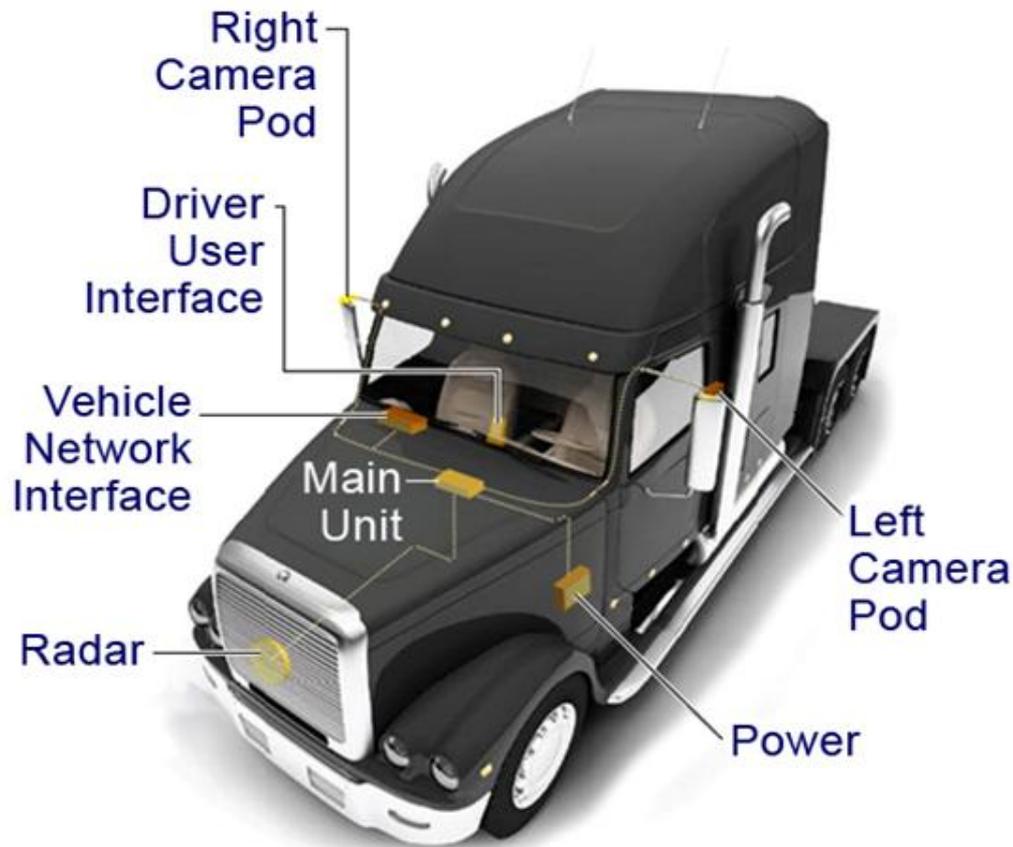
Office of Research and Information Technology



FMCSA Operational Test

- FMCSA is interested in testing onboard monitoring systems for commercial drivers
 - Evaluate effectiveness, acceptance, and impact
 - Collect naturalistic data for future research
 - Great opportunity for a carrier to try out integrated safety systems
- Research team is actively seeking carriers to participate in the operational test program
 - Evaluating carriers, terminals, and driving operations

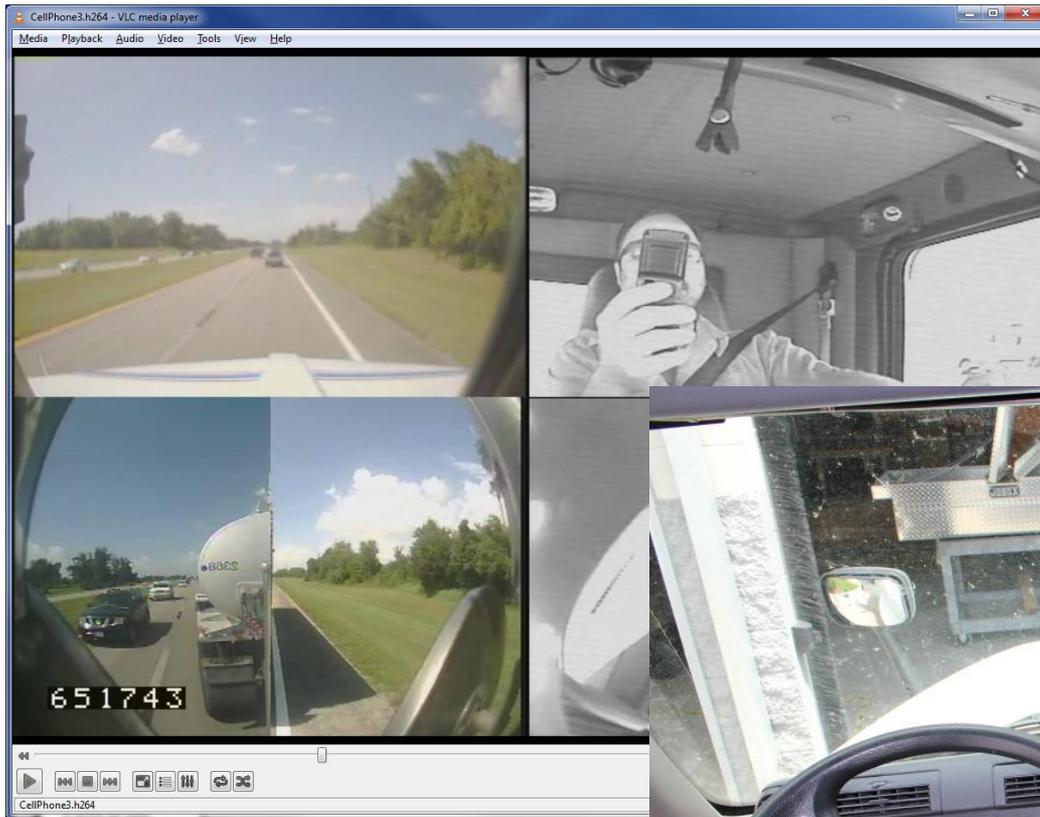
Drive Vision Pro



Forward Collision Warning
Lane Departure Warning
Electronic Logbooks
Electronic Hours of Service
Driver Behavior Monitoring
Inattentive, Drowsy, and Aggressive Driver Detection



Video View and In-Cab Components



In-Cab Feedback



Driving Page
Headway
Basic trip info



Performance Events
Wear and tear, costs
Data only



Safety Events
Safety maneuvers
Video and data



Collision Avoidance Warnings
Imminent crash warnings
Video and Data



Sync'd with office server

Drive Vision Pro Data Collection

- Safety Epochs
 - 10 Hz video and sensor data surrounding trigger event (-15 to +5 seconds)
 - Triggers:
 - Probable collision (spiked acceleration)
 - Hard braking
 - Large lateral acceleration
 - Swerve
 - Forward collision avoidance
 - Lane departure warning message
 - Driver initiated epoch capture
 - Example Videos

Drive Vision Pro Data Collection (cont'd)

- Performance Events
 - Event details
 - Location, magnitude, duration, mins, maxs
 - Triggers:
 - Warm up Idle
 - Shut down Idle
 - Operational Idle
 - Speeding Event
 - Engine Overspeed
 - Hard Braking
 - Grade Speed
 - Short Headway
 - Rapid Acceleration
 - Hard Corner
 - Coasting Event

Drive Vision Pro Data Collection (cont'd)

- Trip Summary Data
 - Summary statistics for each drive:

Fuel Mileage Driving

Fuel Mileage Total

Fuel Spent Idling

Idle Time

Lane Change Turn Signal Usage

Seat Belt Usage (if available)

Time and Miles Driving

Time and Number of Backups

Engine Brake Usage

Time and Miles on Cruise Control

Time and Miles in Top Gear, Top Gear-1

Time and Miles in RPM Bands

Time and Miles in Speed Bands

Time and Miles in Headway Ranges

Speed Relative to Traffic Flow Bands

Speed Relative to Max Grade Speed

Time and Miles by Gear

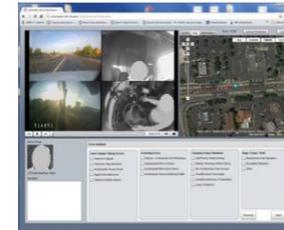
Safety Data Flow

Raw Event



Transecurity Data Center

Analysts validate event
Note conditions
Narrative
Causal factors
Responsibility
Is this a coachable event?



Colorado, Virginia



Validated Video
Events & Data

Driver
Feedback
& Coaching



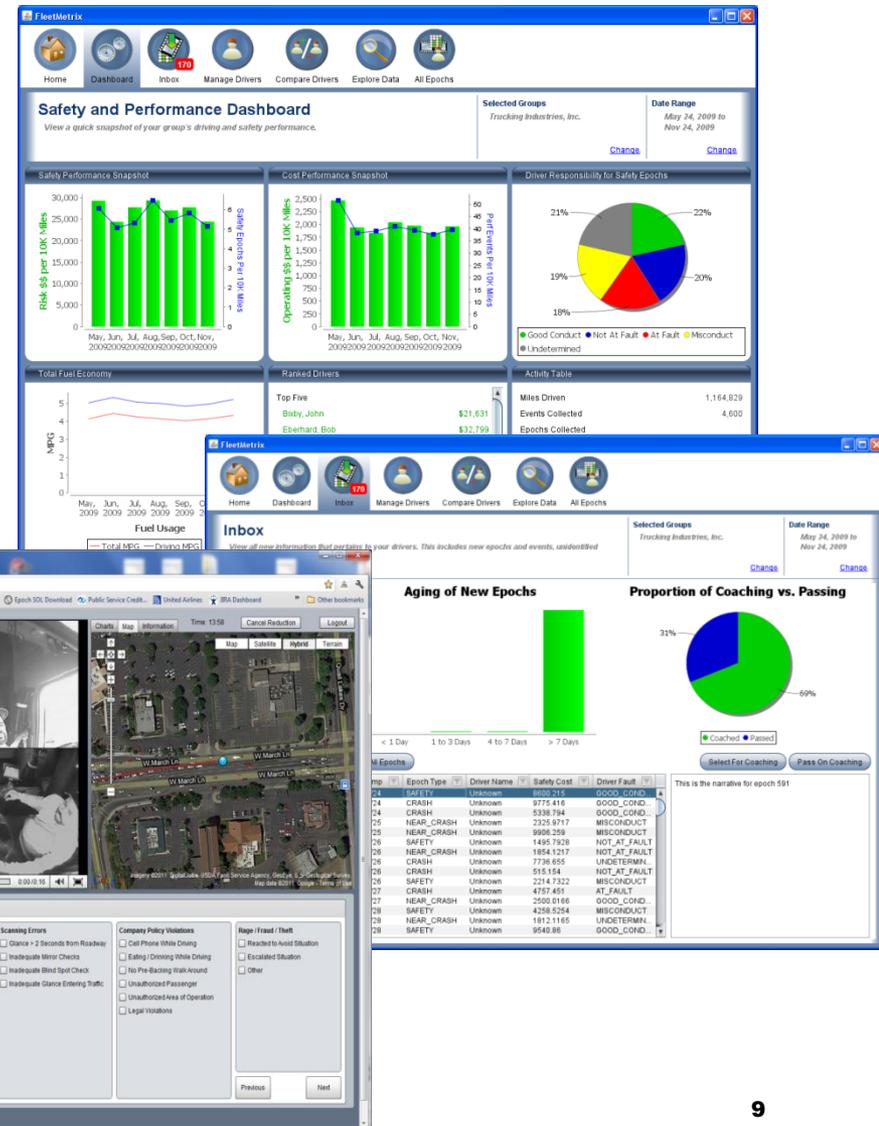
Fleet Management

Driver Comparison
Event Review
Safety Trend Analysis
Feedback/Coaching
Accountability

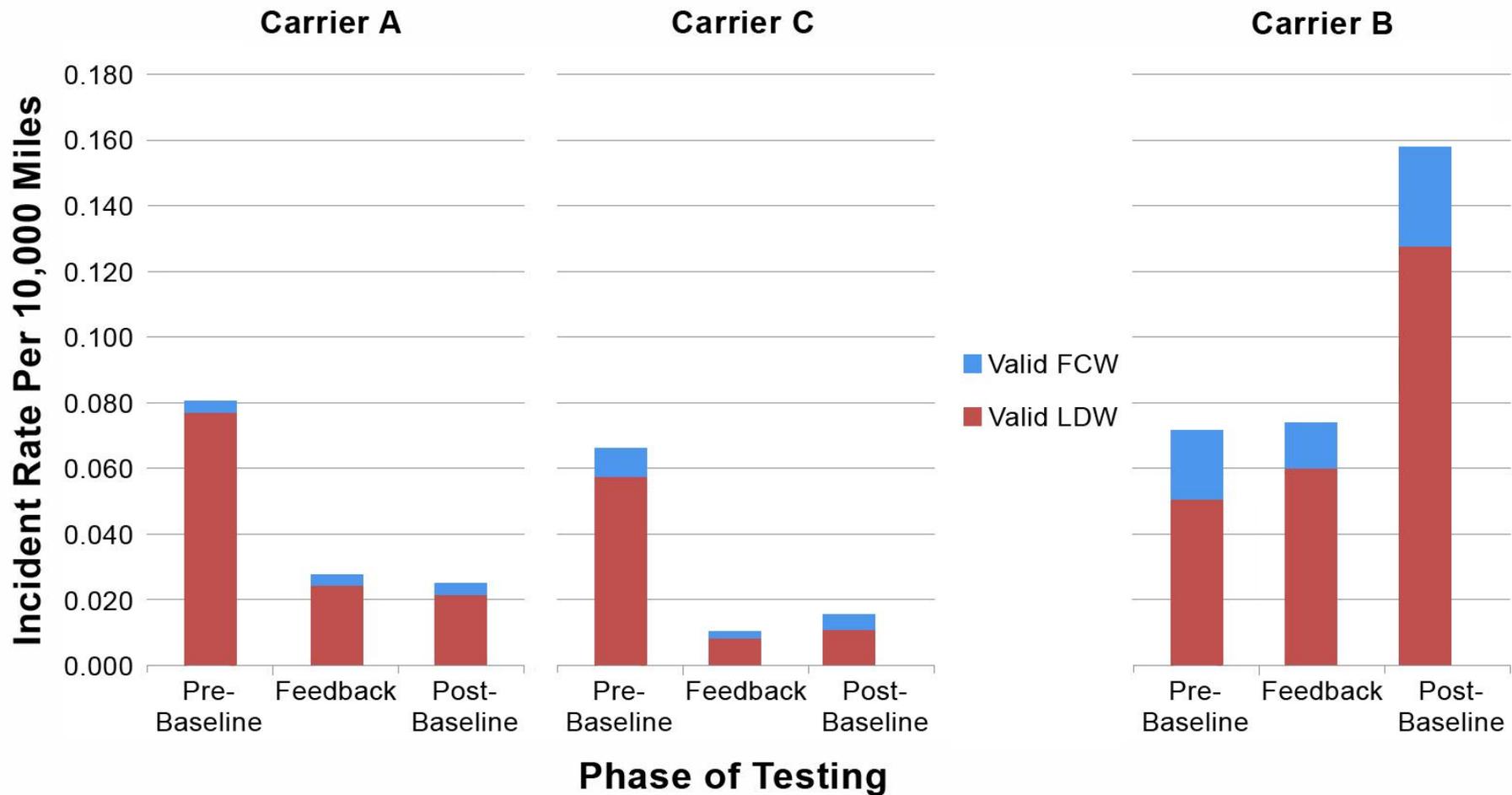


DriveMetric Pro

Provides Information, Not Data
Track Group/Driver Performance
Accountability and Workflow
Identify the Safest Drivers
Identify the Least Safe Drivers
High Value Coaching



Initial Pilot Results



Effective OBMS Components

- Information – Not Data
 - Reduce operational friction
 - Focuses on exceptions and lowest performers
- Assess Data in Context
 - Results are accurate and fair (exposure)
 - Results are validated – video is critical
 - Causation is understood – video is critical
- Both Immediate and Offline Feedback
 - Adjusts driving styles in real time
 - Allow for driver self-correction
 - Provides high value coaching content

DriveVision Pro Product Questions

- Before I talk about the Onboard Monitoring System Field Operational Test, we'll take 5 minutes of questions about the DriveVision Pro product .
- You may enter questions in the box at the lower left of the screen.
- Questions will be taken in the order they are received.

On-Board Monitoring System FOT

- Program is underway
 - Installing on first fleet, pilot testing on the second
- Currently seeking an additional long haul carrier to participate
 - Approximately 100 trucks
 - Ready to proceed immediately
- Equipment and services fees are paid for by FMCSA through the test program for 18 months
- Carriers are responsible for installations
 - 3-4 hours per truck
 - Installation training and validation software are provided free of charge

Research Program Setup

- Commercial Demonstration
 - 270 trucks from 3 separate carriers
 - Fleet operates DriveVision Pro in event-based collection mode for 18 months
- Research Study 1
 - University of Washington assesses the impact of the commercial system on Fleet's safety, cost, and driver behavior
 - Drivers fill out questionnaires with their opinions
 - Drivers can opt in or out
- Research Study 2
 - Video and sensor data are collected continuously while the vehicle is in motion
 - Drivers can opt in or out

Next Steps

- Verify compatibility of Technology with fleet trucks
- Identify terminals/operations to be included
 - Numbers of trucks
 - System rollout planning
 - Effective safety and operations management
- Pilot installation
 - Operational truck and driver
 - Cooperative driver – feedback
 - 2–3 weeks of data collection and verification
- Gain final participation commitment

After Go-Ahead

- Transecurity to hire local support technician(s)
- Schedule installations
- Hold driver informational meeting to explain informed consent, drivers rights, compensation
- 18 month system operation and data collection
- Analysis of effectiveness by University of Washington
- Final report published through FMCSA

How You Can Participate...

- Easy! Just send an email to Mike Mollenhauer at the address below with the following information and I'll get back to you:
 - Name of Fleet
 - Number of Trucks
 - Potential Locations to be Involved
 - Type of Driving Operation(s)
 - Safety Systems Currently in Use (if any)
 - Your Contact Information

Mike's Email Address: MMollenhauer@vtti.vt.edu

Contact Information

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